

**A PLASMA REACTOR HAVING A SYMMETRIC
PARALLEL CONDUCTOR COIL ANTENNA**

ABSTRACT OF THE DISCLOSURE

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The invention in one embodiment is realized in a plasma reactor for processing a semiconductor workpiece. The reactor includes a vacuum chamber having a side wall and a ceiling, a workpiece support pedestal within the chamber and generally facing the ceiling, a gas inlet capable of supplying a process gas into the chamber and a solenoidal interleaved parallel conductor coil antenna overlying the ceiling and including a first plurality conductors wound about an axis of symmetry generally perpendicular to the ceiling in respective concentric helical solenoids of at least nearly uniform lateral displacements from the axis of symmetry, each helical solenoid being offset from the other helical solenoids in a direction parallel to the axis of symmetry. An RF plasma source power supply is connected across each of the plural conductors.

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